

Appln No. 10/728783
Amdt. Dated: January 19, 2007
Response to Office Action of December 6, 2006

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An inkjet printhead comprising: a plurality of nozzles; a plurality of liquid passages leading to each nozzle respectively for providing ejectable liquid to the associated ~~the~~ nozzle; droplet ejection actuators and associated drive circuitry corresponding to each nozzle respectively, the nozzles, ejection actuators, associated drive circuitry and liquid passage being formed on and through a monolithic wafer using lithographically masked etching techniques; wherein, the monolithic wafer has a droplet ejection side and a liquid supply side; such that, each of the liquid passages is formed by ion etching a hole partially through the monolithic wafer from the droplet ejection side, and ion etching a passage from the liquid supply side of the monolithic wafer to the hole; wherein, the width of the supply passage exceeds the width of the hole by an amount that will ensure that a fluid connection is established with the hole, having regard to the tolerances of the etching process.
2. (Original) An inkjet printhead according to claim 1 wherein the width of the hole is between 8 microns and 24 microns.
3. (Original) An inkjet printhead according to claim 1 wherein the width of the supply passage is between 10 microns and 28 microns.
4. (Original) An inkjet printhead according to claim 1 wherein the droplet ejection actuators are thermal bend actuators.
5. (Original) An inkjet printhead according to claim 1 wherein the droplet ejection actuators are gas bubble generating heater elements.
6. (Original) An inkjet printhead according to claim 5 further including a plurality of nozzle chambers, each nozzle chamber corresponding to a respective nozzle; wherein, at least one the of the gas bubble generating heater elements are disposed in each of the nozzle

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chambers respectively; such that, a bubble forming liquid can be supplied to the nozzle chamber for thermal contact with at least one of the bubble generating heater elements so that a bubble of the bubble forming liquid generated by one of the heater elements causes a droplet of the ejectable liquid to be ejected from the nozzle.

7. (Original) An inkjet printhead according to claim 6 wherein the bubble forming liquid is the same as the ejected liquid.

8. (Original) An inkjet printhead according to claim 1 wherein the printhead is a pagewidth printhead.

9. (Currently amended) A method of ejecting drops of an ejectable liquid from an inkjet printhead, the printhead comprising a plurality of nozzles, a plurality of liquid passages leading to each nozzle respectively, droplet ejection actuators and associated drive circuitry corresponding to each nozzle respectively, the nozzles, ejection actuators, associated drive circuitry and liquid passage being formed on and through a monolithic wafer using lithographically masked etching techniques, such that the monolithic wafer has a drop ejection side and a liquid supply side, and, each of the liquid passages is formed by ion etching a hole partially through the monolithic wafer from the drop ejection side, subsequently filling the hole with resist then ion etching a passage from the liquid supply side of the monolithic wafer to the resist before stripping the resist from the hole, wherein the width of the supply passage exceeds the width of the hole by an amount that will ensure that a fluid connection with the hole is established having regard to the tolerances of the etching process, the method of ejecting drops comprising the steps of: providing the ejectable liquid to each of the nozzles using the associated liquid passage; and actuating the droplet ejection actuator to eject droplets of the ejectable liquid from the nozzle.

10. (Original) A method according to claim 9 wherein the width of the hole is between 8 microns and 24 microns.

11. (Original) A method according to claim 9 wherein the width of the supply passage is between 10 microns and 28 microns.

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12. (Original) A method according to claim 9 wherein the droplet ejection actuators are thermal bend actuators.

13. (Original) A method according to claim 9 wherein the droplet ejection actuators are gas bubble generating heater elements.

14. (Original) A method according to claim 12 further including a plurality of nozzle chambers, each nozzle chamber corresponding to a respective nozzle; wherein, at least one of the gas bubble generating heater elements are disposed in each of the nozzle chambers respectively; such that, a bubble forming liquid can be supplied to the nozzle chamber for thermal contact with at least one of the bubble generating heater elements so that a bubble of the bubble forming liquid generated by one of the heater elements causes a droplet of the ejectable liquid to be ejected from the nozzle.

15. (Original) A method according to claim 13 wherein the bubble forming liquid is the same as the ejected liquid.

16. (Original) A method according to claim 9 wherein the printhead is a pagewidth printhead.

17. (Withdrawn) A method of fabricating inkjet printheads, the printhead comprising a plurality of nozzles, a plurality of liquid passages leading to each nozzle respectively for providing ejectable liquid to the associated the nozzle, drop ejection actuators and associated drive circuitry corresponding to each nozzle respectively, the method comprising the steps of: forming the nozzles, ejection actuators, associated drive circuitry and liquid passage on and through a wafer using lithographically masked etching techniques so that the wafer has a drop ejection side and a liquid supply side; and, forming each of the liquid passages by etching a hole partially through the wafer from the drop ejection side; filling the hole with resist; etching a supply passage from the liquid supply side of the wafer to the resist; and, stripping the resist from the hole; wherein, the width of the supply passage exceeds the width of the hole by an amount that will ensure that a fluid connection is established with the hole, having regard to the tolerances of the etching process.

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18. (Withdrawn) A method according to claim 16 wherein the width of the hole is between 8 microns and 24 microns.

19. (Withdrawn) A method according to claim 16 wherein the width of the supply passage is between 10 microns and 28 microns.

20. (Withdrawn) A method according to claim 16 wherein the droplet ejection actuators are thermal bend actuators.

21. (Withdrawn) A method according to claim 16 wherein the droplet ejection actuators are gas bubble generating heater elements.

22. (Withdrawn) A method according to claim 20 further including a plurality of nozzle chambers, each nozzle chamber corresponding to a respective nozzle; wherein, at least one of the gas bubble generating heater elements are disposed in each of the nozzle chambers respectively; such that, a bubble forming liquid can be supplied to the nozzle chamber for thermal contact with at least one of the bubble generating heater elements so that a bubble of the bubble forming liquid generated by one of the heater elements causes a droplet of the ejectable liquid to be ejected from the nozzle.

23. (Withdrawn) A method according to claim 21 wherein the bubble forming liquid is the same as the ejected liquid.

24. (Withdrawn) A method according to claim 16 wherein the printhead is a pagewidth printhead.

25. (Currently Amended) A printer system incorporating an inkjet printhead comprising: a plurality of nozzles; a plurality of liquid passages leading to each nozzle respectively for providing ejectable liquid to the associated ~~the~~ nozzle; droplet ejection actuators and associated drive circuitry corresponding to each nozzle respectively, the nozzles, ejection actuators, associated drive circuitry and liquid passage being formed on and through a monolithic wafer using lithographically masked etching techniques; wherein, the monolithic wafer has a droplet ejection side and a liquid supply side; such that, each of the liquid

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passages is formed by ion etching a hole partially through the monolithic wafer from the droplet ejection side, and ion etching a passage from the liquid supply side of the monolithic wafer to the hole; wherein, the width of the supply passage exceeds the width of the hole by an amount that will ensure that a fluid connection is established with the hole, having regard to the tolerances of the etching process.

26. (Currently amended) A printer system according to claim 17-25 wherein the width of the hole is between 8 microns and 24 microns.

27. (Currently amended) A printer system according to claim 17-25 wherein the width of the supply passage is between 10 microns and 28 microns.

28. (Currently amended) A printer system according to claim 17-25 wherein the droplet ejection actuators are thermal bend actuators.

29. (Currently amended) A printer system according to claim 17-25 wherein the droplet ejection actuators are gas bubble generating heater elements.

30. (Currently amended) A printer system according to claim 20-29 further including a plurality of nozzle chambers, each nozzle chamber corresponding to a respective nozzle; wherein, at least one the of the gas bubble generating heater elements are disposed in each of the nozzle chambers respectively; such that, a bubble forming liquid can be supplied to the nozzle chamber for thermal contact with at least one of the bubble generating heater elements so that a bubble of the bubble forming liquid generated by one of the heater elements causes a droplet of the ejectable liquid to be ejected from the nozzle.

31. (Currently amended) A printer system according to claim 21-30 wherein the bubble forming liquid is the same as the ejected liquid.

32. (Currently amended) A printer system according to claim 17-25 wherein the printhead is a pagewidth printhead.